THE EFFECT OF CHILD'S VOCAL INTENSITY ON UNIVERSITY STUDENTS' RATINGS

BY

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The purpose of this study was to examine the effect of student's vocal intensity on university students' ratings. A second purpose was to look at differences in ratings of graduate and undergraduate students with regard to child's reading performance at different levels of vocal intensity.

The subjects of this study were 60 graduate and undergraduate students (16 graduates and 45 undergraduates). The subjects were enrolled in undergraduate courses in the Department of Special Education at the University of Florida.

The instruments of the study were a hypothetical case history, three versions of a videotape, and a rating scale. The subjects were randomly assigned to three groups. Each group read a hypothetical case history about an eleven-year-old boy. Then they viewed one of the versions of the videotape. In the first version the child's level of vocal intensity was average (60 db). In the second version, the child's voice was of low average intensity (50 db). In the third version the child's voice was at high-level intensity (70 db). The subjects rated the child's reading performance on a rating scale. The rating scale had eleven items. The data were analyzed using a two-way analysis of variance (ANOVA). The independent variables were levels of intensity (average vs. low vs. high) and group membership (graduate vs. undergraduate). The dependent variable was the rating scale itself which was analyzed in two forms as follows: 1) overall average ratings of the eleven items considered as a group and 2) rating of each item separately.

The results of the data analyses for the dependent variable as the overall average of the eleven items revealed no significant interaction between the treatment and group membership. Also there were no significant main effects due either to level of intensity or to group membership. The analysis of data for the dependent variable as the individual average of each item revealed no significant interaction. Neither was there any significant main effect due to treatment as indicated by the individual scoring of item with the exception of item 3. Further analysis of data (Bonferroni T Test) for item 3 ("child needs to work more on reading") revealed a significant difference between average and low vocal intensities.

Recommendations for further research are also presented in this study.

CHAPTER I

INTRODUCTION

Unfortunately the educational system still does not provide the best education possible, not even for those who try to use it to its best advantage. To find the reasons for this inadequacy of the educational system, numerous researchers are looking for the source of the problems in the children themselves, or in their environmental conditions and personal situations. The inability of the educational system to provide the very best results for its children motivates investigators to examine classroom conditions and other factors which might have an effect on students' performances. Of particular interest are the results of tests, because the consequences of an education are revealed in student academic and behavioral achievement.

A class is usually composed of a teacher and some students. The teacher has a very important role in the education of children. Braun (1976) believed that the "teacher is without question the key to a successful classroom learning experience" (p. 185). Although a multiplicity of factors have an influence on a student's growth, the teacher has his/her most important role in terms of the improving a student's performance and classroom learning. Every class is comprised of students whose charcteristics differ, and teachers always have been influenced by these characteristics. These individual or group qualities make distinct impressions upon teachers; therefore teachers behave differently toward their various students. The mechanism of this phenomenon appears to work in this way: a teacher has inherent in his/her mind an attitude or belief about specific students; ultimately the teacher behaves differently toward these students than he/she does toward the rest of the class. This belief motivated researchers to shift their focus toward the teacher-student relationship (Brophy and Good, 1974; Rosenthal and Jacobson, 1968; Becker, 1952). The investigators believed that because students demonstrated different behaviors, teachers acquired attitudes toward students based on their characteristics. This teacher expectancy research was published and reviewed in The Review of Educational Research by Braun (1976), Cooper (1979), and Dusk (1975). These investigators concluded that various student characteristics inspire teachers to assume particular attitudes toward them, attitudes that are based on their characteristics.

Braun (1976) reviewed the literature regarding the effect of students' attributes on teachers' attitudes. He concluded that several factors indicating race, socioeconomic class, sex, name, and language might have an effect on teachers. Braun proposed a behavioral cycle between teacher input and learner output. (The cycle includes some sources of input which affect teachers' attitudes.) These input sources are factors such as results from intelligence tests, sex, child's name, ethnic background and physical characteristics. Teachers were found to form expectations regarding student performance based on these inputs. These expectations were spontaneously reflected in his/her behavior (output). Consequently a teacher's behavior toward students was modified with the modification evident in his/her quantity of interactions and in his/her feedback. Braun believed that the behavioral cycle did not stop at this stage, but that the output influenced both the original input and students themselves. For example, a student who experienced low levels of interaction with a teacher formed a lesser amount of self respect or a diminished self view. The result of this negative self view again influenced teacher attitude and became a source of student input.

Cooper (1979) also reviewed literature in teacher expectancy. He believed that students' differential backgrounds and abilities could cause the teacher to have differential attitudes about students. He suggested a model to elucidate the procedures of teacher expectancy formation.

The work of Rosenthal and Jacobson (1968) motivated educators to continue their work in teacher expectancy. Rosenthal and Jacobson looked for student outcome as predicted by teacher expectation.

The work of Rosenthal and Jacobson stimulated researchers in various ways. While some investigators searched for models to explain teacher expectancy (Braun, 1976, Brophy and Good, 1970, Good and Brophy, 1977), others centered their investigations on students' attributes or inputs (Becker, 1952; Coates, 1972; Demeis and Turner, 1978).

Good (1981) reviewed the research concerning teacher expectancy and student perception. He suggested a model which would show how teachers might influence student behavior. This model was presented first by Good and Brophy in 1970, and then again in 1973. Good described the model as follows:

> 1. The teacher expects specific behavior and achievement from particular students.
> 2. Because of these varied expectations, the teacher behaves differently toward different students.
> 3. This treatment communicates to the students what behavior and achievement the teacher expects from them and affects their self-concepts, achievement and motivation, and bonds of aspiration.
> 4. If this treatment is consistent over time, and if the students do not resist or change it in some way, it will shape their achievement and behavior. High-expectation students will be led to achieve at high levels, whereas the achievement of low-expectation students will decline.
> 5. With time, students' achievement and behavior will conform more and more closely to the behavior originally expected of them (p. 416)

Another group of investigators looked for possible factors which might influence teacher attitudes. The student's personality (Rummel-Rossi and Merrifield, 1977, Jackson et al., 1969, Silberman, 1969), race (Coates, 1972, Datta et al., 1968), sex of the student (Adams and Lavoie, 1974; Bank et al., 1980), the socio-economic status of children (Becker, 1952; Gollub and Sloan, 1978, Rist, 1970; Yee, 1968), the student's attractiveness (Algozzine, 1977; Demeis and Turner, 1978; Salvia et al., 1977), the student's speech and language (Seligman et al., 1972; Williams et al., 1972), student's handwriting (Buck and Bounds, 1972); other factors, such as a student's name and intelligence test results, have also been investigated by researchers. There are, however, other factors which have not been investigated by researchers; one of these factors is a student's vocal intensity. Information regarding the effects of a loud or soft voice on a teacher's attitude is lacking in literature.

Justification of the Study

The notion of noise and sound has been investigated by some researchers. But the relationship between these two phenomena, teacher expectancy and student vocal intensity, has not been investigated. The vocal intensity of a child may have an influence on the teacher. If so, then the teacher may be impressed by the loudness or softness of his/her students' voices. This impression might be negative or positive. The results of this impression might be differential attitudes towards or reactions to the different vocal intensities.

Good (1981) believes that although there has been a decade of research on teacher expectancy, it remains a singular issue.

Braun (1976) believes that one way to reduce the affect of teacher expectancy is to know more about "input" factors. The input factors include students' characteristics.

Brophy and Good (1974) believed that

> to interpret the meaning and implications of classroom analysis research we need to know the extent and importance of individual differences in teachers' interaction patterns with different student in their classroom. (p. 6)

Therefore, research is still needed to clarify teacher-student relationships. The vocal intensity of students is one factor which might have an influence on the teacher-student relationship. However, there is a lack of research relevant to this matter. Seligman et al. (1972) investigated the effects of voice, pronunciation, speech style, and pitch, but they did not examine the effect of vocal intensity. Several studies sought to determine the effect of language on teacher attitudes. It has been found that spoken language impresses the listener in such a way that the listener forms an impression of the speaker's personality (Lambert, 1967; Tucker and Lambert, 1969)

Kryter (1970), in his book, described the effects of voice on man. He believed that

> there is every indication that it is loudness level or the perceived noise level of a sound that, to first order of approximation, determines its arousal effect on man's nonauditory system and work performance. (p 546)

The importance of noise phenomena has led researchers to investigate the effect of noise on work performance both in the laboratory and in the factor (Kryter, 1970). Other investigators looked for the effect of ambient noise on school environments as well as its effects on student performance (Licklider and Miller, 1951; Nober, 1973; Peterson and Gross, 1963; Kentall and Shaw, 1980). Some researchers examined varying intensity levels in classrooms and also in different places (Huggerty, 1974; Miller, 1977). Still research was lacking regarding the effect of different speech intensity levels on attitudes of teachers. There was a need to know more about the effect of this factor on teacher impressions of different students.

Statement of the Problem

The effects of certain student attributes on teacher attitudes still needed to be determined. Investigators needed to search and learn more about the effect of different inputs on teacher evaluations. Therefore, an investigation to examine the effect of a child's vocal intensity on the university students' evaluation and impression of that child was considered worthwhile. Because of a lack of research about this matter, the present study was designed; its purpose was to investigate the effect of a child's vocal intensity on university students' ratings of that child.

Purpose

The purpose of this study was to investigate the effect of a child's voice level and rater's educational level on university students' evaluations of the child's reading performance.

Variables

The independent variables in this experiment were voice intensity and raters' group membership. Voice intensity had three levels average (baseline), low, and high intensity. The group membership factor had two levels: graduate and undergraduate. The dependent variable was the questionnaire itself which was analyzed in two forms as follows: 1) the rating of child's reading performance based on the overall average ratings of the eleven items, and 2) rating of each item separately.

Questions Under Investigation

The study sought to answer the following questions concerning the effect of a child's vocal intensity on university students' reactions to the child.

The main question of the study was

> Does a child's vocal intensity have different effects on the graduate and undergraduate raters' evaluations of the child's reading performance.

The subordinate questions of the study were

1. Does the intensity level of a child's voice affect the university students' ratings of the child?
2. Are the graduate and undergraduate evaluators rating the child the same?
3. Are the graduate and undergraduate raters equally affected by a child's vocal intensity in terms of rating of the child?

Definition of Terms

Intensity has been defined in Webster's Third New International Dictionary (1976) as "the energy with which air is propelled through the voice tract in articulating loudness" (p. 1175).

Sound intensity has been described by Sataloff & Michael (1973) as "the sound intensity at a specific location is the average rate at which sound energy is transmitted through a unit area normal to the direction of sound propagation. The unit, used for sound intensity, are Joules per square meter per sound. Sound intensity is also expressed in decibels" (p. 176). Sound intensity has been defined by Newby (1979) as "the intensity of a sound wave refers to strength of the particle vibration, or rate of sound transmitted through a medium" (p. 12).

Decibel (db) has been defined by Stataloff & Michael (1973) as "the levels of acoustical intensity, acoustic power, hearing thresholds, electric voltage, electric current, etc., as well as sound pressure level, thus it has no meaning unless a specific reference quantity is specified" (p. 176).

Sound level meter has been described by Newby (1979) as "an instrument including microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of noise and sound levels in a specific manner" (p. 328).

Attitude has been defined in Webster's Third New International Dictionary (1976) as "a persistent disposition to act either positively or negatively toward a person, group, object, situation, or value" (p. 141).

Rating has been described in Webster's Third New International Dictionary (1976) as "a relative estimate or evaluation of individual's traits or qualities by indicated preferences on a scale of items" (p. 1885).

Teacher expectation has been defined by Good & Brophy (1977) as "inferences that teachers make about present and future academic achievement and general classroom behavior of students" (p. 384).

Self-fulfilling prophecy has been defined by Good & Brophy (1977) as "situations in which teachers' expectations influence the students' behavior" (p. 384).

Delimitations

The experimental populations of subjects were selected from the Department of Special Education at the University of Florida in Gainesville, Florida. The subjects of this research were graduate and undergraduate students who enrolled in undergraduate courses in the Department of Special Education at the University of Florida during Summer 1981.

Limitations

The limitations of this study were

1. The population for the study was limited. The subjects were university students and not school

teachers. This limitation necessarily effects the generalizability of the results.

2. Since the taping procedure does not occur in real classes, this also limited the generalizability of the study.

3. Given the lack of literature regarding this problem, the guidelines for research were limited.

4. The inadequacy of facilities for making the videotape and the quality of the videotape itself might have affected the results of the study.

5. The limited quality of the case history and questionnaire might have an effect on the results of the study.

CHAPTER II

REVIEW OF THE LITERATURE

From a review of the literature on teacher expectancy, a lack of research dealing with the effect of a child's voice intensity on teacher rating was evident. Therefore, this chapter focuses on studies related to teacher expectancy and also to noise and sound phenomena. To clarify this review, the chapter is divided into two categories: A) teacher expectancy, and B) voice and sound. The matter of teacher expectancy was documented within two subheadings: 1) the effect of group differences on teachers' attitudes, and 2) the effect of individual differences on teachers' attitudes based on the ideas of Brophy and Good (1974). To be included in this review, the research must have met the following criteria.

1. It must have investigated the effect of group or individual differences on teacher attitudes
2. It must have been data-based.
3. It must have described the data analysis procedure.
4. It must have dealt with schools and students.
5. It must have revealed positive results.

The research had to meet the following criteria to be included in the noise and sound category:

1. The study must have been researched in educational situations.
2. The sound-level meter must have been used to assess the level of noise or sound.
3. The report was data-based.
4. The research dealt with children.

Several studies that have not met the above criteria will be briefly discussed due to the relevance of the content.

Teacher Expectancy

The work of Rosenthal and Jacobson (1968), which concluded that the performance of students can be affected by the teacher's expectancy, stimulated other investigators. Subsequent researchers were interested in looking for the effects of differential characteristics of students as a group or individually in terms of their influence on the teacher's rating, attitude and evaluations. Rosenthal and Jacobson (1968) conducted an experiment with school children to find the effects of teacher expectations on children's achievements. They administered a group intelligence test on children in kindergarten through fifth grade then randomly selected the names of five children from each class and called them "potential bloomers." The list of these children was given to the children's respective teachers. "The only assumed difference between the experimental and control subjects existed in the minds of the teachers" (Braun, 1976, p. 186). Later the same test was administered again to the children. The results showed that the experimental children in the first and second grade made improvements on the intelligence test. This result supported the Rosenthal and Jacobson hypotheses. In other words, the teachers' expectations of the children's performances were responsible for the difference between the test/retest results. Also, the results showed that teachers reported the experimental children as being more interested and happier than control individuals. The Rosenthal and Jacobson experiment was criticized by Elashoff and Snow (1971); Snow (1969); and Thorndike (1968) in relation to the generalizability of the experiment, and to the lack of adequate data analysis, design and procedures. However, this study stimulated further investigations, which will be reported in the following two sections: 1) the effect of group differences on teacher expectancy and 2) the effect of individual differences on teacher expectancy.

Source of Teacher Expectancy: Effects of Group Differences on Teacher's Attitude

It has been found that students' characteristics can be influenced by the teacher. The research discussed in this section focuses on the influence of group differences on teacher's attitude. Group differences are defined as those pertaining to children who share certain attributes with other members of a group, such as socioeconomic status, sex, and race (Brophy and Good, 1974).

Social Class: The socioeconomic status (SES) of a student is a factor that can influence the teacher's rating. Becker (1952) conducted a study to examine the effect of social class (especially lower social class) on public school teachers. This study was based on sixty interviews of teachers in the Chicago school system. The results revealed that teachers are influenced by children's levels of social class. The effect of the teacher's attitude was evident when children were grouped for teaching purposes. Although Becker's study did not meet the selected criteria for this study, it is reviewed here as one of the earliest studies concerning bias in the educational system. Yee (1968) investigated the way teachers were influenced by different attributes of advantaged and disadvantaged students, and likewise the way teachers affect these students was examined over two years. In the first year 100 intermediate grade teachers participated in an attitude inventory. These teachers came from middle class schools. The attitudes of the students were measured during the second year. The same experiment was conducted on a sample from lower class schools, but this time 112 teachers and their students participated in the experiment. The teachers' attitudes were assessed by the Minnesota Teacher Attitude Inventory and Semantic Differential test. Analysis of variance was used as a statistical procedure. The results showed that a student's socioeconomic status was the most important variable influencing the teacher. In addition, teachers perceived middle class white students as the most approachable. Lower class white students followed, then lower class Mexican-American students. Teachers perceived lower class black students as least favorable.

Miller et al. (1968), conducted an experiment on the influence of social class on teacher attitudes. They constructed four hypothetical case histories. The case histories involved children with the same level of IQ, school grades, and behavior, but two students were described as belonging to the middle class while the other two were from lower class families. The teachers were asked to answer on a rating scale and predict the future of the students. Results indicated that the teachers rated middle class students higher than lower class, although the children were equal in terms of the factors of IQ, grades and behavior. The same results were obtained by Goodwin and Sanders (1969) and also by Friedman and Friedman (1973). Goodwin and Sanders (1969) found that the socioeconomic status of children in the first grade was the most important factor in predicting their performance. In the sixth grade, however, IQ was the most important. The results of standardized tests were the most important factors in predicting the future performance of the children. Friedman and Friedman (1973) found that middle class students were given more total reinforcement than lower class students by their teachers. Rist (1970) observed a group of kindergarten students to determine the relationship between a student's socioeconomic status (SES) and teacher expectations. Rist observed the children in kindergarten and followed them through first and second grade. The results revealed that teachers made up their minds about their students in the first nine days of kindergarten. The teachers grouped the students within nine days after school started into kindergarten classes based on reading ability and the social class of the children. This grouping continued through first and second grade. This study cannot be generalized to other situations because the study was based on the attitude of only three teachers.

Gollub and Sloan (1978) reviewed the research which was conducted concerning the effect of social class on teacher's expectancy. They concluded from their review that teachers' predictions of a student's future performance depended upon the student's race and social class. In addition, they found that students from minority groups and lower income families were treated in a less than appropriate manner when compared to other students.

Sex: Another variable which has influenced teachers' attitudes is the student's sex. Meyer and Thompson (1956) conducted a study to find the effect of sex differences on teachers' approval or disapproval of students. The subjects of the study were from three sixth-grade classrooms (39 boys and 39 girls). The interactions between the teacher and students were observed and analyzed for 30 hours in each classroom. The results of the study showed that boys had on balance a more negative relationship. Teachers had more negative contacts with the boys, although the boys received more praise than the girls.

Datta et al. (1968) investigated the effects of the sex and scholastic ability of pupils on teachers' ratings. The subjects of the study were 153 students from the seventh grade. Forty teachers rated the students' adjustment on the Ullman scale and on the modified Glidewell, Donkee and Kanter scale. In addition, the teachers rated students on a 64-item long behavior inventory (made by the investigators). The scholastic aptitudes of the students were measured by California Mental Maturity tests. The results revealed that boys were rated lower than girls on task orientation. The teachers also described boys as more aggressive.

Good et al. (1973) investigated the ways in which boys and girls were treated differently by male and female teachers. The data were collected in 16 classrooms located in four urban junior high schools. Seventh and eighth graders participated in the study. Four female and four male math teachers and four female and four male social studies teachers participated in the study. The behavior of male and female teachers toward boys and girls was assessed by a version of the Brophy-Good Dyadic Interactions Observation System. The results showed that the high-achieving boys were treated best by their teachers as compared with other students, but low-achieving boys were perceived less favorably by both male and female teachers. The authors suggested the need for research in elementary schools, taking into consideration as well the teacher's personality.

Race: Another factor which has influenced teachers' attitudes is the students' race. Although there has been relatively little research about this matter, the Datta et al. (1968) study (reviewed earlier) had an example of how race can influence the teacher. They found that Negro students were rated as less competent in task orientation than other children. Also, the results showed that black students with high IQ's were seen differently from low IQ black students.

Coates (1972) conducted an experiment concerning the effects of sex and race on teachers' behavior. Forty-eight white students from introductory psychology classes volunteered as subjects (24 males, 24 females). Two white and two black boys from the third grade (CA = 9 years) also participated in the experiment. Each child performed discrimination problems in front of six male and six female subjects. The subjects' evaluations of each child's performance were studied. In addition, the adults responded to a list of nine trait-rating scales. A 2x2 factorial design was used for analyzing the data. The results showed that black children received more negative statements from the white male adults than from white female adults. In response to personality traits, both male and female adults perceived the black children less favorably than white children. Both male and female white adults judged the black boys more negatively than white boys. The generalizability of this experiment is in question because these same results might not be obtained in other situations such as real classroom and with real teachers. Furthermore, evaluations of four boys generates information from such a narrow base that it would not be fair to extend the observations greatly beyond the confines of the situation.

Several other studies also reported that race influences teacher-student relationships and teachers' attitudes towards their students (Katz, 1973; Rubovits and Maehr, 1973; Yee, 1968).

Source of Teacher Expectancy: The Effect of Individual Differences

In the previous sections, the literature dealing with the effects of group factors, such as social class, sex and the race of children was reviewed. This part will focus on the influence of factors which differentiate individuals rather then groups. These variables include student's personality, student's achievement, physical attractiveness, and student's speech characteristic.

Student Personality: Student personality is a factor which might have an effect on teacher-student relationships. Jackson et al. (1969) investigated the teacher-child interaction. They hypothesized that teachers showed more personal involvement with those students whose names came to their minds most easily. Thirty-two third-grade teachers were interviewed in this study. In the interview, the investigators asked the teachers to describe two boys and two girls from their classes. Then the content of these descriptions was analyzed to determine the teacher-student interaction. It was found that teachers interacted more with the students they considered salient. Boys also received more negative comments from their teachers than girls. Silberman (1969) studied the relationship between teachers and elementary school students. Ten third-grade teachers were used as subjects. The behavioral expressions of these teachers toward their students were analyzed. The results showed that teachers had less contact with those students who were indifferent but showed greater tendency to relate with those who seemed concerned.

Heton and Oakland (1977) investigated four teacher attitudes: attachment, rejection, concern and indifference as directed toward their students. Fifty-three third- and fourth-grade teachers from ten elementary schools participated in the study. They described their attitudes toward 16 descriptions of elementary school pupils. The independent variables were sex, intellectual ability and personality characteristics. A multiple linear regression analysis was used. The results showed that the student's personality had indeed influenced the teachers' attitudes. The student's personality especially affected the attitudes of attachment and rejection, while personality mildly influenced the attitudes of concern and indifference.

Hummel-Rosei and Merrifield (1977) investigated relationships between teachers and students based on personality factors. A sample of thirty-eight students were selected from a junior high school (n = 219). A questionnaire was used to evaluate the personalities of the population of children. The results from evaluations of 109 students were used for the study. Teacher interaction scales were used to evaluate the relationship between teachers and students. A multiple regression was used to analyze the data. The results of the study revealed that a child's personality had an effect on the teacher-student interaction. The teachers were using more monitoring techniques with self-confident students. They also felt more challenged by self-confident and intelligent students. Feshbach (1969) also found that a child's personality had an effect on his/her teacher-student relationships.

Achievement: Another variable which was found to have an effect on a teacher's attitude is a child's level of achievement. Brophy and Good (1970) investigated the teacher-child interaction related to achievement. The study observed teachers from four first-grade classes. The teachers rated and ranked their students based on their achievement. The investigators then observed the interactions between teachers and high vs. low-achievement students. The results showed that teachers had better attitudes toward high achievers and had more expectations of these children, while low achievers received less praise for their good performances from their teachers. Also, teachers had low expectations for low achievement students.

Rothbart et al. (1971) conducted an experiment to find the relationship between a teacher's expectation and a student's behavior. Thirteen female, senior university students participated in the study as teacher models. Twenty-seven male and twenty-five female students from high school served as subjects of the study. Each teacher supervised four students. Two of these students arbitrarily were labeled as "lacking in intellectual potential." A video tape was used to record the interaction of teachers with the different students. The dependent measures were attention, reinforcement, student's verbal output and teacher's attribution of the child's quality. Multiple analysis of various t-tests was used to analyze the data. The results suggested that "high-expectation" students received more attention from their teachers. In addition, teachers described the "low achievers" as less intelligent and having less ability to succeed in the future. Both groups received the same amount of reinforcement from their teachers.

Prawat and Jarvis (1980) investigated the effects of a student's sex, reading achievement, and IQ, on teacher expectations. Two hundred and eighty-four (157 boys and 127 girls) children from grades 1 through 6 participated in the study. The instruments used consisted of a behavior inventory to extract teachers' impressions of their students (School Behavior Check List, Form A-2), Slosson's oral reading test to assess each child's reading achievement, and the Otis-Lennon mental ability test to assess the level of each child's intelligence. A multiple regression analysis was used. The student's performance attributes were independent variables; school behavior checklists as completed by teachers were the dependent variables. The results showed that the student's sex was less effective on teachers' attitudes than the student's IQ and reading achievement.

Good et al. (1980) also studied the interactions between teachers and students. Observations were conducted in sixteen classrooms a total of three times. One hundred and ninety-two pupils from grades 3, 4 and 5 participated in the study. Sixteen university students volunteered as teachers. The observations of teacher-child interactions were conducted by 12 students. A three-way repeated measure of analysis of variance was used for the statistical analysis of the results. The independent levels were student expectation level (high, average, low), student sex, and time of year. The results showed that teachers had different interactions with high and low achievers. Neither the child's nor the teacher's behavior changed during the year, although teachers gave more praise to high achieving students early in the year. The investigators concluded that teachers behaved differently toward high and low achievers.

Physical Attractiveness: Physical attractiveness has been found to be another factor which has an effect on teacher evaluations. Dion et al. (1972) investigated the effect of physical attractiveness on teacher expectancy. Sixty students (30 male and 30 female) participated in the study. The first half of the subjects received three pictures of girls (attractive, average attractiveness, low attractiveness). The second half also received three pictures of boys (attractive, average attractiveness, low attractiveness). The dependent variables of this study were the rating of personality traits and the prediction of student's future occupation and experiences. Results showed that attractive persons ranked as more socially desirable and that the subjects predicted that attractive children would have happier lives.

Algozzine (1977) investigated interactions between teachers and children. The subjects of the study consisted of all children from a single elementary school in grades 4, 5, and 6. Interaction data for 80 attractive or unattractive girls and boys were obtained for the study via a modified form of the Brophy-Good Dyadic interaction scale. After observing teacher-child interactions, the teacher rated each child in several categories. The results showed that attractive children received more interaction from their teachers. Unattractive children as well as attractive boys had negative interactions with their teachers in comparison with attractive girls. The authors concluded that facial attractiveness has a greater effect on teacher attitudes than had been suggested before.

Salvia et al. (1977) studied the relationship between physical attractiveness and student achievement. The student's achievement was based on achievement test scores and report cards. Seven attractive children and seven unattractive children were selected from six classes (grades 3, 4, 5). The achievement test used for the study was the Iowa Test of Basic

Skills. A multifactor repeated measure of analysis of variance was used to analyze the data. The results revealed significant interactions between attractiveness and grade and that attractive students in the 4th grade received higher scores. The unattractive children received lower scores on report cards than unattractive students. The investigators suggested that future research must clarify whether attractiveness itself caused this relationship or if other factors may have been operating. They gave this suggestion because of the inadequacy of correlational methods to provide explanations of cause and effect with respect to the variables.

Demeis and Turner (1978) investigated the effect of student's physical attractiveness, race and dialect on teacher expectations. Sixty-eight females from teachers of elementary school and university classes participated in the study ($\bar{X}$ mental age = 33; experience mean = 6.98). The teachers evaluated personality, academic ability and performance of children who varied in regard to race, physical attractiveness and dialect. The independent variables were two levels of attractiveness. The results indicated that all variables had significant effects and that combinations of these variables had different effects on teacher's evaluations.

Speech Quality. Research has shown that children whose speech samples were unusual or accented were rated lower by teachers. Williams et al. (1972) studied the effect of language on teacher expectancy. Their sample consisted of blacks, Anglo and Mexican-American children from middle and low social classes.

The language sample was obtained by asking children to answer two questions. A videotape was obtained from the sessions and shown to the teachers. One hundred and seventy-five teachers were then asked to rate the children. The results showed that teachers had more negative attitudes towards pupils using nonstandard English. In addition, they had low expectations of their performance. The results also revealed that teachers manifested negative attitudes and behaviors toward those black students who spoke nonstandard English.

Seligman et al. (1972) explored the effect of speech style on teacher expectations of student behavior. Compositions, drawings, photographs and speech samples of children were obtained for this study. These data were collected from 36 boys in the third grade. Eight of the boys were selected for the experiment. The children's speech was recorded on tape, and then the eleven student-teachers listened to their voices and were asked to assess each child's voice with regard to eleven categories. The categories included pronunciation, speed of speech, intonation, pitch, quality, and individual characteristics. Nineteen female education students participated in the main experiment. Then, each of the boys' attributes was presented to the teachers in this form: first the child's picture was shown, then the child's tape-recorded voice was presented to the subjects. Finally, the child's composition was given to the subjects. The subjects were asked to evaluate the children based on the above characteristics using a seven point rating scale. Six separate three way analyses of variance were applied to the data; repeated measures were used. The independent variables consisted of voice (good and poor), drawing and composition, and photograph (good and poor). The dependent variables consisted of scores on rating scales. The results showed that voice and photograph variables had significant effects on teacher ratings of children's intelligence and personal characteristics. Also it was reported that boys with poor voices were evaluated less favorably than boys with good voices. The researchers concluded that speech style is an important factor in the evaluation of children by teachers. Even if it is combined with other factors, its effect could still be seen. They suggested that future study must use videotape recordings and should investigate the effect of various speech characteristics.

This experiment had some limitations. The circumstances did not seem natural because in real situations, the child's appearance would be combined with his voice. In other words, separating voice and photograph made the study artificial. Also, the investigation did not measure the levels of voice or the child's pitch accurately with sound level meters. However, the appropriateness or inappropriateness of voices was obtained by subjective impressions. This study lacks generalizability of results.

From reviewing the research it can be said that group differences--sex, race and social class--had an important effect on teacher attitudes. Also, research showed that individual differences--student achievement, physical attractiveness, personality and speech--influenced teachers' expectations. However, other factors exist which might need to be investigated; one of these factors is the intensity of the students' voice; it has not yet been determined whether a child's vocal intensity has any effect on teachers' ratings of their students. The purpose of the present research is to investigate this effect. To know more about the characteristics of noise, sound, and their effects on student performance, the next category is devoted to a review of the literature related to noise and sound.

Noise and Sound

In this part the characteristics of sound and noise will be discussed. The research will be summarized in two subcategories: the first, research that has been conducted to determine noise levels in different situations; the second, the effect of noise on the performance of children.

Brandy and Studebaker (1972), in Audiological Assessment, discussed the characteristics of noise, saying "To most people, noise is undesirable sound, but it can be described physically along frequency, intensity and time parameters" (p. 445). Of these noise properties, only intensity was covered in this experiment.

Newby (1979) also discussed the properties of noise and sound. He defined intensity as "strength of the particle vibration, or the rate of sound-energy transmission through medium"

(p. 12). If a person puts great force into vibration, then the sound tends to vibrate and has high intensity. Intensity of sound is measured by an instrument called a sound-level meter, and intensity is indicated in terms of decibels (db). Newby (1979) expressed the limits of intensity as follows

> The least intensity corresponds to the minimum audible threshold of the ear, and the highest intensity represents to the point at which, on the average, sound produces a sensation of pain. (p. 13)

Intensity levels considered in this study were neither very high (painful) nor very low (inaudible). The levels of intensity in different situations are presented in Table 1.

Several researchers have investigated the influence of noise on children's performance of various tasks. Their research has been done using different noise levels. Before reviewing the research in this area, however, the levels of noise in schools will be discussed.

Sataloff and Michael (1972) presented a table with different noise levels in different locations, including an assessment of noise levels in schools. However, these noise levels were obtained when the spaces were not in use. They believed that noise may effect work in a variety of ways, directly

TABLE 1

Levels of Intensity in Different Situations

Hubbert (1974) The Sound Level Intensity in Selected Settings

Source	Loudness	Sound Level in (db)
Thunder, boiler, factory, jet engine	deafening	100-120
Noisy factory, loud Hi-Fi	very loud	80-100
Noisy office, average t.v.	loud	60- 80
Noisy home	moderate	40- 60
Average Conversation	moderate	40- 60
quiet home, quiet conversation	faint	20- 40
whisper, rustle of leaves	very faint	0- 20

TABLE 1--Continued

Maffei (1976) The Sound Level Intensity in Selected Settings

Sources	Distance	Sound Level in (db)
Rocket engine		180
Jet plane at take off		150
Maximum record rock music		120
Textile loom		110
Jet fly-over at newspaper press	300 m	100
Motorcycle, food blender diesel truck	16 m	90
Garbage disposal		80
Vacuum cleaner		70
Ordinary Conversation		60
Light traffic noise	30 m	50
Average living room		
Library, soft whisper		30-40
Broadcasting studio		20

TABLE 1--Continued

Miller (1977)	The Sound Level Intensity in Selected Settings	
Source of Environment	Aural Effect	Sound Level (db)
Shotgun blast, jet plane at take off	Human ear	140
Rock music (amplified) thunder, severe	Uncomfortably loud	120
Tractor, farm type/ subway train motorcycle, cocktail party (100 guests)	Extremely loud	100
Window air-conditioner crowded restaurant	Moderately loud	80
Singing birds	Quiet	60
Normal Conversation		60
Rustle of leaves, light rain	Very faint	40
Whisper	Just audible	20

TABLE 1--Continued

Peterson and Grose (1963)	The Sound Level Intensity in Selected Settings	
Source of Environment	Distance in Feet From Source	Approximate Sound Pressure Level (db)
50 HP siren	100	135
Hydraulic press	100	130
Jet engine test control	3	110-115
Subway train	20	90-100
Heavy traffic	50	80
Average Conversational Speech	3	65
Average residence		45
Sound studio		20

TABLE 1--Continued

Sataloff and Michael (1973)	The Sound Level Intensity in Selected Settings	
Source of Environment	Distance (ft)	Sound Pressure level (db)
Pneumatic chipper	5 ft	115
Textile loom		105
Newspaper press		95
Diesel truck (40 mph)	50 ft	85
Passenger car (50 mph)	3 ft	65
Conversation	3 ft	60
Quiet room		40

TABLE 1--Continued

Suran And Rizzo (1979)	The Sound Level Intensity in Selected Settings	
Sources	Levels of Heavy Loss	Source Level (db)
Loud thunder	Total	120-130
Motorcycle engine, Rock & roll band	Total	110
Street traffic	Total	100
Telephone ring	Profound	90
Ordinary Conversation	Severe	60- 80
Normal house sounds, electric typewriter	Moderate	30- 50
A whisper	Mild	0- 20

Locations	Sound Level (db)
Libraries	30 - 40
Classrooms	30 - 40
Laboratories	35 - 45
Halls & Corridors	35 - 55

and indirectly, and that the amount of interference with work depends on the levels of noise. Furthermore, the influence of noise on communication is an important factor.

Sandar (1965) investigated the levels of noise in different types of schools under different conditions. The equipment which he used for this was a sound-level meter. Noises were recorded at 15-second intervals in 15 schools (47 classes), including kindergarten, elementary and high school. The schools were located in both busy and residential locations; the noise levels under occupied and unoccupied conditions were as follows

	Kindergarten	Elementary	High School	Units for Deaf
Unoccupied	58	56	55	42
Occupied	69	59	62	52

The study also measured levels of teachers' voices in the classroom. Average levels of the voices of kindergarten teachers were reported as 70 decibels, 64 in elementary school, and 67 db in high school. The distance between the sound-level meters and the teachers was 10 feet.

Slater (1968) investigated the influence of noise on the way children performed writing tasks. One hundred and twenty-nine male and 134 female seventh graders in a suburban school participated in the study which used the STEP Reading Test (Form 3) as a written task. The subjects were matched on IQ, achievement, and social class (in each 8 groups). Using different noise levels recorded as typical for different school situations, data were obtained at the quiet (45 - 55), average (55 - 70) and noisy (75 - 90) levels. The results showed that there was no significant noise effect on children's performance. This study cannot be generalized to other situations, because the selected schools were located in three cities in south-central New York. The levels of noise might not be the same as in other schools. Also, the study did not investigate the effects of interaction between particular noise levels and individual subjects but was targeted on the difference between equated groups.

Slater (1968) also reported the noise level in a sample school as follows

Classroom	db
occupied--class silent	54 - 62
occupied--normal speech	60 - 72
art room--class in session	56 - 84

Nober (1973) investigated the differences among normal, speech-defective, and reading-retarded children on auditory discrimination tests. This study was conducted under both quiet and noisy conditions. Thirty-nine children (23 boys and 16 girls) from kindergarten to second grade participated in the study. Their average IQ was 111.6 and their reading ability was on the first-grade level (Gate-MacGinitie Reading Test). The levels of sounds were taken in four different schools. The overall intensity recorded by the sound level meter was 64.7 dbA. The noise level in the teacher's room during the administration of individual tests was 39.5 dbA. Each child received Form 1 of the Wepman Auditory Discrimination Test. One form of the test was administered in a quiet room; the other form was used under noisy circumstances. The results revealed that a definite difference exists between performance on tests measuring auditory discrimination under quiet as opposed to noisy situations. Therefore, Nober suggested that the Wepman Tests, which are standardized in quiet rooms, should not be used as an index of a child's performance under classroom conditions.

Nober and Nober (1975) also studied the effects of classroom noise on the auditory performance of children. Forty normal and learning disabled children (grades 4 - 6) participated in the study. The normal group consisted of 18 boys and 2 girls with CA = 9.2 to 11.6. The learning disabled children consisted of 18 boys and 2 girls with CA = 9 to 11.8. The noise levels were registered by a sound-level meter in six classrooms during language and art classes. The average sound-level meter reading in the classrooms was 64 dbA; the average level of noise in the special teaching rooms was 42 dbA, the average of noise intensity in three small group rooms (L.D.) was 55 db. The task was the Wepman Auditory Discrimination Tests. The results showed that noise has an effect on children's performance. Learning disabled children had more errors in comparison with normal children in both situations.

Zentall and Shaw (1980) investigated the influence of classroom noise on performance. The subjects were 24 hyperactive children (3 girls and 21 boys) and 24 normal children (6 girls and 18 boys). These children were from grade seven of a middle school. The levels of noise were obtained by a sound-level meter. The intensity of noise was 70 db during milk, breakfast and free time, 68 db during noisy work time, and 65 db during work time. The independent variables were group membership (hyperactive vs. control), noise level (low vs. high), time (first treatment session vs. second session). Achievement was used as a co-variable. Half of the control group and half of the hyperactive children were given math problems in noisy environments, while the rest worked on the math problems in quiet environments. Two weeks later, the first group performed in the quiet environments, while the second group worked on the math problems under noisy circumstances. A three-way repeated measure analysis of covariance was used for analyzing the data. The results revealed that noise did have an effect on the performance of both control and hyperactive children. The hyperactive group's performance was worse in noisy conditions compared to their performance in quiet conditions. However, the effect was reversed for the control group. This effect was more pronounced on the hyperactive children. The same team conducted a follow-up experiment under more natural circumstances. In this experiment the task was reading rather than math skill. The results were identical.

Christie and Glickman (1980) investigated the effect of noise on the intellectual performance of 156 boys and girls from a public school, hoping to elucidate differences on the basis of sex. The children were enrolled in the first, third, and fourth grades. The noise levels in two environments were measured; one was noisy (70 dbA), the other relatively quiet (40 dbA). Half of the subjects performed in the noisy environment; the other half performed in the quiet situation. The results showed that boys performed better in noisy environments compared to girls.

Most investigations in the area of noise interference have been conducted on the adult population (Jones et al., 1979; Posner and Ventry, 1977; Smith and Broadbent, 1980; Weinstein, 1978). Because these studies did not meet the criteria for selection they were not included in this review; other investigations were omitted for the same reason.

Summary

Two categories of literature were reviewed in this chapter. In the first category--teacher expectancy--it was determined that teachers form impressions of children based on certain attributes. These expectations then affect the performance of children, and so the cycle continues in the classroom. The literature suggests that group differences, such as sex, social class and race,have influenced teachers' attitudes. Likewise, the literature reviewed revealed that individual differences also influence teachers' ratings of children's performance on behavior. However, it was also shown that other variables which might influence teachers have not, as yet, been investigated. One such factor is the student's voice level (intensity). As indicated in the second category of the review, noise and sound are important factors that affect human beings. The research indicated that noise has been shown to influence the performance of children, but research concerning the effect of noise on teachers is lacking. Also evident from the review of literature was the fact that conflict exists between researchers regarding the levels of noise or voices in different situations. These conflicts are frequently due to the varying sensitivities of instruments used to measure intensity. Therefore, it is not possible to find the exact sound intensity of a given situation. According to Ellenburg and Russell (1976), "The effect of noise upon human performance has been an area of conflicting reports and research studies for over four decades" (p. 327). The average classroom noise or levels of children's voices have still not been adequately measured. In reviewing the literature, it was found that the intensity of voices in normal conversation is approximately 60 decibels, although the conditions under which this measurement was obtained were not mentioned. Overall, however, researchers report that the average normal conversation occurs at 60 db. It was also reported that noise levels in occupied schools range between 40 db and 70 db. As was mentioned earlier, this is a controversial matter, first, due to the sensitivity of the sound level meter and second, the facts that measurements were conducted in different schools, in crowded areas as well as in quiet areas. Therefore, outside noises might have caused these differences.

The review of literature in teacher expectancy and noise indicated a need for research regarding the interface between children's voices and teachers' evaluations. The present study took this factor into consideration as the effect of a child's vocal intensity on university students' attitudes were examined.

CHAPTER III
METHOD

This chapter describes the subjects, instruments, procedure and statistical design that were used for this research.

Subjects

From a preliminary search, it was found that seventy-three students majoring in a variety of subjects were enrolled in undergraduate courses in the Department of Special Education at the University of Florida during the summer quarter, 1981. Sixty students participated in the study, 15 graduate and 45 undergraduate. The subjects were investigated in order to ascertain that they did not have any hearing problem before they were included in the study.

Instruments

To investigate the affect of the child's vocal intensity on subjects as well as the subjects' subsequent reaction, the following materials were used.

Hypothetical Case History

This case history was focused on an eleven-year-old boy. The information was presented in neutral form--i.e., the child's history was told in such a way that subjects did not form impressions of the child's ability. Since the main purpose of this study is to research the influence of a child's vocal intensity, the subjects should not be influenced by the case history. Therefore, the case history showed the child neither as a high achiever nor low achiever. The type of information given to subjects included the parents' occupations and educational levels, residence, the child's grade level, age, and some of his characteristics in school and at home. All subjects read the same case history (see Appendix A).

Videotape

After the subjects read the case history, they viewed a videotape. In this videotape an eleven-year-old boy from the sixth grade read a passage from the Gates-McKillop Reading Test. A sample of the passage is presented in Appendix B. A teacher appeared at the beginning of the videotape and provided introduction to the child. During the session the teacher did not interrupt the child's reading. The duration of the videotape was approximately two minutes. The tape used for this procedure was one half inch reel-to-reel. The following instruments were necessary for the production of the videotape: monitor, two SONYAV-365 videotape recorders and a camera.

Once the videotape was produced, the child's vocal intensity was calibrated and measured by a sound-level meter, model 1551-C General Radio. Since the purpose of this study is to determine the effect of varying intensities of voice on subjects, three levels of intensity were used for this investigation.

1) A videotape with the child's voice at average intensity (60 dbm).

2) A videotape with the voice intensity at a low level (50 dbm).

3) A videotape with the child's voice at high level (70 dbm).

For producing the three intensity levels on the videotape, the following instruments and techniques were used.

The master videotape used during shooting was played back, and the child's reading session was taped on a half-inch, reel-to-reel videotape. This tape was then spliced into three different parts and the teacher's introduction was placed at the beginning. The child's voice was then manipulated electronically in order to vary intensities; one intensity level was chosen for each version of the tape. The videotape was then assembled according to the following format:

> Part One: Segment one was finally recorded using no change at all in the audio level. This level became the standard against which the levels of other segments were measured. (Both child's voice and teacher's voice were at 60 db.)
>
> Part Two. The teacher's introduction was followed by the child reading the passage. The adult's voice remained at 60 dbm., while the child's voice was recorded at 50 dbm.
>
> Part Three. The teacher's introduction was followed by the child's voice. In this part the child's voice was elevated to an approximate intensity of 70 dbm, while the adult's voice remained at 60 dbm

Questionnaire

To encourage subjects to listen carefully to the videotape, they were asked to put an "X" at the points where the child made error(s) in his reading.

During the second stage, the subjects were asked to evaluate the child's voice quality, speed of reading and reading performance based on a 5-point scale. This portion of the questionnaire was employed as a means of concealing the purpose of the study from the subjects and to indicate to them that the quality of the child's voice and his reading performance were not misrepresented by a faulty tape.

A rating scale was designed to measure the effect of the child's vocal intensity on the subjects. More specifically, the rating scale provided the means to determine how much the subjects were influenced by the child's vocal intensity levels.

Each subject was asked to respond to eleven statements on a rating scale. The rating scale was a five-point Likert-type, with one being least likely and five being the most likely choice. Because the item 11 (the boy is progressing normally) was backward, in analyzing the data for this item, a rating of one was considered as the most likely choice and five was considered the least likely choice. A sample of the scale is presented in Appendix C.

Procedures

From the preliminary investigation it was found that 73 students were enrolled in six undergraduate courses in the Department of Special Education at the University of Florida. Therefore, from each of the classes students were assigned randomly to one of three treatments--25 students to treatment

1 (average intensity of voice), 24 students to treatment 2 (low intensity of voice) and 24 students to treatment 3 (high intensity of voice). Of the 73 students, 60 participated in the experiment. Therefore, 18 students ultimately participated in treatment 1, 22 students in treatment 2, and 20 students in treatment 3.

The first group (n=18) received the neutral case history and viewed the videotape with the child's voice at average intensity (60 db). The second group (n=22) read the same hypothetical case history and viewed the videotape with the intensity at low level (50 db). The third group (n=20) also read the case history, then heard the videotape with the child's intensity of voice at a high level (70 db).

The monitor used for this investigation was an 18-inch screen. Since it was necessary that each version of videotape playback be at known intensity level (60, 50 or 70 db), the monitor knob was set at an exact point before any data were collected. This setting was predetermined using a sound-level meter, thus assuring exact levels of intensity.

The point at which the knob was set was not changed regardless of the treatment. On all three recordings the teacher's voice was fixed at 60 db; this intensity corresponded to the point at which the monitor knob was set. Because there were three versions of the same tape, however, one group of subjects heard the child's voice at low intensity (50 db), one group heard it at the average intensity (60 db) the same as the teacher's) and one heard it at a loud intensity (70 db).

The experiment was run in a small room in the Department of Special Education. In the room was a table with 4 chairs; the video-monitor was placed in front of the students, at a distance of 3 feet. This measure was determined before the experiment began. One to four students participated in each session of the experiment.

All subjects received the same instructions. The testing period required approximately 8 minutes. All testing sessions were conducted in the same physical environment; the monitor was invariably set at a distance of three feet from the subject(s).

Design

Since an additional purpose of this study was to determine whether graduate and undergraduate students respond differently to varying intensities of voice, the design of the study considered two factors--the levels of intensity, and group membership. The first factor had three levels:

Level One-- child's vocal intensity at average level.

Level Two-- child's vocal intensity at low level.

Level Three--child's vocal intensity at high level.

Group membership had two levels:

Level One--graduate students.

Level Two--undergraduate students.

Sixty students (15 graduate and 45 undergraduate) from six Special Education classes were the subjects of this study.

Subjects within each group were randomly assigned to each one of three treatment levels by the use of a random numbers table. Because each group was assigned randomly to each level of intensity (treatment), the design of the study is considered a two-way randomized-design. Table 2 graphically represents this design.

TABLE 2

Design

		Level of Intensity		
		Group 1 Average Intensity	Group 2 Low Intensity	Group 3 High Intensity
Group Membership	Graduate	n=3	n=8	n=3
	Undergraduate	n=15	n=14	n=17
		n=18	n=22	n=20

The statistical procedure used for the analysis of data was a two-way factorial analysis of variance (ANOVA). By using this statistical procedure, indications of the following could be inferred: 1) the possible effect of voice intensity on ratings of child's reading performance, 2) the possible difference between graduate and undergraduate raters in terms of their evaluations of child reading performance, and 3) the interaction between the vocal intensity and group membership.

The analysis of data was based on the mean rating given to each of the eleven questions (each question was analyzed separately). The average rating given to the child was also used in the analysis; this was calculated by deriving the overall average from the mean scores of the eleven items.

The data were analyzed by using GLM Procedure in the Statistical Procedure System (SAS)

Hypotheses

H_0 : A child's vocal intensity has no significant effect on university students' ratings of that child.

H_0 : There is no significant difference between graduate and undergraduate evaluators in ratings of a particular child's performance.

H_0 : There is no significant difference between the reports of graduate and undergraduate evaluators in regard to the child's voice intensity during ratings gauged in terms of the child's reading performance.

CHAPTER IV

RESULTS

The results of the study are presented in this chapter. These results were obtained through various analyses of the data. The data--individual units of information--were obtained in the form of subjects' answers to a questionnaire which was composed of eleven items. The analysis of data was based on the mean rating given to each of the eleven items as well as on the average rating given to the child. The subjects' answers were obtained after they had read a hypothetical case history and viewed a videotape.

To determine the possible effect of voice intensity on rating of the child's reading performance, a two-way factorial analysis of variance (ANOVA) was used. By using ANOVA it was possible to address the effects of group membership and voice intensity on the dependent variables. In other words, the possible differences between graduate and undergraduate students with respect to their ratings of the child's reading performance were analyzed as were the effects of three levels of voice intensity. It also was possible to elucidate the interaction effect between vocal intensity and group membership. The assumptions which underlie ANOVA were considered in carrying out this study. Kirk (1968) presented the assumptions which are associated with F-distribution as follows:

1. Observations are drawn from a normally distributed population
2. Observations represent random samples from populations.
3. Variances of populations are equal.
4. Numerator and denominator of F-ratio are independent. (Kirk, 1968, p. 43)

This study had two independent variables: vocal intensity and group membership. Vocal intensity had three levels: average, low, and high intensity. Group membership had two levels. graduate and undergraduate students. The dependent variable was the questionnaire itself which was analyzed in two forms. 1) the rating of the child's reading performance based on the overall average value of the eleven items, and 2) the rating of the child's reading based on each item itself.

The .05 level of significance was used to test the hypotheses. To analyze the data, type II sum of square from the Statistical Analysis System (SAS) computerized program was used. Type II sum of square assumes that there is no interaction between variables (Cramer and Appelbaum, 1980).

First, the data were analyzed for average ratings of the eleven items (overall average from the mean scores of the eleven items). Second, the data were analyzed for mean rating given to each of the eleven items. Based on these two interpretations --dependent variable as the average of eleven items and dependent variable as the mean of each item, the analysis of data was presented as follows.

The Analysis of Data for Section 1: The Dependent Variable as the Average of Eleven Items

To analyze the data and answer the hypotheses, a two-way analysis of variance was used. By this statistical procedure it was possible to elucidate both the effect of interaction and main effects. The analyses of data support the null hypotheses. Therefore, the first hypothesis, as stated below, was accepted:

> H_{O_1} : A child's vocal intensity has no significant effect on a university student's rating of that child.

In other words, there was no significant main effect due to vocal intensity.

The second null hypothesis was also accepted:

> H_{O_2} : There is no significant difference between graduate and undergraduate evaluators in rating a particular child's performance.

The third null hypothesis was also accepted:

> H_{O_3} : There is no significant difference between the reports of graduate and undergraduate evaluators with regard to the child's voice intensity levels during ratings given to the child's reading performance.

In other words, there were no significant interactions between treatment and group membership. The calculated F did not exceed the critical F for any of the three hypotheses. A summary of the data is presented in Table 3.

TABLE 3

Mean, Standard Deviations and Analysis of Variance for Dependent Variable as Average of T_1 through T_{11}

Variable	Mean		Standard Deviations
Undergraduate	Average	2.52	0.54
	Low	2.03	0.52
	High	2.37	0.66
Graduate	Average	2.81	0.48
	Low	2.47	1.08
	High	2.06	0.83

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	1.65	1.77	.17
Group membership	1	0.35	0.81	0.37
Treatment X Group	2	1.14	1.23	0.37

The Analysis of Data for Section 2: The Dependent Variable as the Reading of Each Particular Item

In this part, each item of the questionnaire was analyzed separately. The reason for undertaking these analyses was to observe the subjects' reactions to each item. Furthermore, individual items from the test could be grouped together based on certain common characteristics.

Items 1, 2, 5, and 10 could be grouped together as a factor because all of them focused on the child's needs for outside helpers as outlined below:

--Item 1 described help from the school counselor.
--Item 2 described help from the speech pathologist.
--Item 5 described help from a psychologist.
--Item 10 described help from the parents.

Items 3, 4, 6, and 7 could also be grouped together as a factor termed "child's need." That is, item 3 described the child's need in terms of reading, item 4 described the child's needs in terms of vocabulary. Item 6 was related to the child's need in terms of attention span, and item 7 described the child's needs in terms of managing behavior.

Items 8 and 9 also could be grouped as a factor--"meeting with parents." Finally, item 11 could be used as a factor--"child's progress."

An analysis of variance was performed for each item. No significant effect was found for 10 of the eleven items. In other words, in Factor 1 (comprised of items 1, 2, 5, 10) which focused on "outside helper," the data showed no significant interaction or main effects. The tables showing the analyses of data for these items are presented in Appendix D. The results pertaining to the second factor--"child's need," showed that, except for the third item, there were no significant effects. In other words, there was no significant effect in terms of interactions or main effect for items 4, 6, and 7. The table showing the analysis of data for these items is presented in Appendix D.

The analysis of data for item 3 showed a significant effect with regard to the treatment. Item 3 was the statement. "He needs to work more on reading." The data analysis for this item was made by using an analysis of variance. Although the data showed no significant interaction between treatment and group membership and no significant effect due to group membership, it did reveal significance with regard to the treatment (levels of intensity). To determine the exact locus of this effect, the Bonferroni t-Statistic was used. It was found that there was a significant difference between the average vocal intensity and low vocal intensity. Table 4 presents the mean standard deviations and summary of F for item 3. Table 5 presents the Bonferroni T Statistic for item 3.

TABLE 4

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 3

Variable	Mean		Standard Deviations
Under-graduate	Average	3.00	0.84
	Low	2.00	0.67
	High	2.93	1.06
Graduate	Average	3.66	1.52
	Low	2.87	1.55
	High	3.00	1.41

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	9.13	4.08	0.02*
Group	1	3.70	3.31	0.07
Treatment X Group	2	1.31	0.59	0.55

Item 3. He needs to work more on reading.

TABLE 5

Data Analysis for Third Item on
Bonferroni t-statistic

Parameter	t Value	Significance of t
Average intensity vs. low intensity	2.67	0.009*
Average intensity vs. high intensity	0.53	0.59
Low intensity vs. high intensity	-2.21	0.03

Bonferroni critical value = 2.47

Data analysis for Items 8 and 9 -- "meeting with parents", and Item 11 -- "child's progress" revealed no significant interactions or main effects. The Tables of analysis of data for these items also are presented in Appendix D.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the effect of child's vocal intensity on university students' ratings; as such, it provides a base for future research. Previous research had examined the effects of different attributes of students on teachers' rating. However, the influence of children's levels of vocal intensity on teacher's rating was not examined.

This chapter presents the summary and conclusions that can be drawn from the results of the investigation. In addition, various implications of the results and recommendations for future research are presented in this chapter.

The findings of Rosenthal and Jacobson (1968) motivated subsequent researchers to follow the pattern of their work, especially regarding teacher expectancy. This has been an important area of educational research since the publication of their data. Some researchers have developed models for teacher expectancy phenomena (Braun, 1976, Brophy and Good, 1970).

Likewise, numerous researchers have attempted to investigate the effects of different characteristics of students on teachers' attitudes. The effect of students' personality on teacher expectancy was investigated by Jackson et al. (1969) and Silberman (1969). Other student attributes which have been frequently investigated by researchers are race, sex, socioeconomic status, attractiveness, and speech and language. Handwriting and students' names have also been studied by a few researchers.

Although notions of sound and noise have been examined by some researchers, the effects of students' vocal intensity on teachers' rating had not. In other words, in the past the relationship between the phenomena of teacher expectancy and student vocal intensity was never scientifically investigated.

Some research has been directed toward ascertaining the effects of noise on work performance in the laboratory and in factories (Kryter, 1970). Also, researchers have looked at the effects of ambient noise on school environments in general, as well as at its more specific effects on student performance (Nober, 1973; Peterson and Gross, 1963). Zental and Shaw (1980) investigated the effect of noise on students' performance and found that noise did indeed have an influence. From a review of the literature, it was also determined that most researchers reported the intensity of normal conversation to be approximately 60 decibels, although this is not the precise level reported by all researchers.

Because the intensity of voice is measured by a very sensitive instrument called the sound-level meter, researchers could not always reach the same conclusion regarding the exact levels of intensity in different settings. However, most reports indicated that the intensity of normal conversation is around 60 db. It has also been reported that levels of noise in occupied schools range between 50 db and 70 db. Therefore, although the levels of intensity for this study are arbitrary, they are based on the review of literature and represent the results of a careful selection process. From the review of existing research was found a need for study regarding the effect of child's vocal intensity of teacher's rating.

In summary, based on the review of pertinant literature, it has been shown that teachers tend to have differential attitudes towards their students, based on a variety of the students' characteristics. Also it was found that students performed differently under different noise levels and that noise intensity varied in different settings. Therefore, a need for research was apparent--that is, it was necessary to investigate another student attribute: voice intensity. That became the purpose of this study--to investigate the effect of child's vocal intensity on university students' ratings of that child. If there were to be any effect, then the possibility existed for differential interaction of teachers with students based on voice level. There was also the possibility that students with less preferable voices were put in special classes or that teachers might put unfavorable labels on them.

Therefore, the purpose of this study was to determine the effect of child's level of voice intensity on university students' ratings. In other words, it attempted to answer these questions:

1. Does the intensity level of a child's voice affect the university students' ratings of that child?
2. Do graduate and undergraduate evaluators rate the child the same?
3. Are the graduate and undergraduate raters equally affected by a child's vocal intensity in terms of rating of the child?

Review of Method

Subjects

Sixty students participated in this study (fifteen graduate and forty-five undergraduate). The subjects were enrolled in undergraduate courses in the Department of Special Education at the University of Florida during the summer quarter, 1981.

Instruments

The instruments of this study consisted of three parts: hypothetical case history, videotape, and questionnaire.

1. Hypothetical case history--this case history described an eleven-year old boy. It was written in a neutral form.
2. Videotape--three versions of a videotape were used. In the first version, the child's voice was at average intensity (60 db). In the second version of the videotape, the child's voice was at a low level (50 db). In the third version, the child's voice was at a high level (70 db).
3. Questionnaire--a rating scale was used to measure the effect of child's vocal intensity on teacher's rating. The rating scale was a five-point Likert-type scale. This rating scale had eleven items. Subjects were asked to evaluate the child's voice quality, speed of reading and reading performance before they responded to the rating scale. These 3 statements were used to conceal the purpose of the study from subjects and also to determine whether the subjects did indeed differentiate between the child's voice levels

Procedure

The subjects were assigned randomly to one of three treatments. Each heard the child's voice at average or low or high intensity. All subjects received the same instructions. Then they read the hypothetical case history. Next, each group of subjects viewed one version of the videotape. In the last part, they rated the child's reading performance. The average of eleven items was used as the dependent variable. In addition, each item from the rating scale was analyzed individually as a dependent variable in order to yield more information.

The Review of Results

A two-way factorial analysis of variance was used to analyze the data. The independent variables were the child's vocal intensity and group membership. The vocal intensity had three levels (average, low, and high). The group membership had two levels (graduate vs. undergraduate). The dependent variable was first considered as the overall average of all eleven items, second, it was considered as the mean rating of each item.

The analysis of data when the dependent variable was the average of all items revealed no significant main effects regarding levels of vocal intensity and group membership. Also no significant interaction between group membership and levels of intensity were revealed.

The analysis of data when the dependent variable was the mean of each item considered individually revealed no significant main effects due to levels of intensity for all items except item 3 (needs to work more on reading). The Bonferroni t-test was used to find out the place of this effect. It showed that there was a significant difference between the effect of average vocal intensity as opposed to low vocal intensity on university students' ratings. The results also showed that children with average vocal intensity were rated worse than children with low vocal intensity.

There was no significant main effect due to group membership when each item was considered as a separate dependent variable. Also there was no interaction effect.

Conclusions

The analysis of data for the dependent variable as the average of all eleven items revealed no significant main effects or interactions. In other words, the raters (graduate and undergraduate students) formed very similar impressions of a child under conditions where his voice was at low or average or high intensity. In other words, the data suggested that vocal intensity appears not to provoke any strong impression upon raters. The possibility exists that teachers (subjects) could not differentiate between the three versions of tape. However, it should be recalled that subjects did evaluate the child's voice quality, speed of reading and reading performance before they responded to the main rating scale. The analysis of the data for these three statements revealed no significant main effects or interaction (the tables for these analyses are presented in Appendix D). The results of these three items, therefore, might support the idea that subjects could not discern any difference among the levels of intensity. If this were so, it would not be surprising to find that the subjects registered no specific impressions connected to the different levels of intensity. However, another explanation for the fact that no significant result was derived from the analysis of data for the average of the eleven items is that the vocal intensity might not in reality have any influence on teacher's rating.

The analysis of data for taking each dependent variable revealed no significant main effect due to group membership. This means that graduate and undergraduate students formed the same impressions of the child's reading performance. It was also shown that no difference existed between the attitudes of graduate and undergraduate raters in regard to the child's levels of vocal intensity (no interaction between group membership and vocal intensity).

The results for Factor one (items 1, 2, 5, 10; outside helpers) revealed that graduate and undergraduate subjects formed much the same impression of the child's reading performance. In other words, there was no difference in evaluation by subjects of different educational backgrounds. The results also showed that raters evaluated the child's performance equally at all 3 levels of intensity. Because the subjects did not register an awareness of any difference among the three levels of intensity, one might surmise that vocal intensity did not have any effect on teacher expectancy.

Furthermore, there was no interaction regarding vocal intensity and group membership.

The data for Factor 3 (items 8, 9, meeting with parents) and Factor 4 (item 11, child's progress) revealed the same results and explanations as for Factor 1.

The data analysis for Factor 2 (items 3, 4, 6; child's needs) likewise revealed no difference between graduate and undergraduate students. Their perceptions of the child's performance was the same. It was also shown that there was no difference between the reports of graduate and undergraduate evaluators in regard to the child's voice intensity. This might suggest that level of intensity did not evoke any particular response that could be associated with the academic level of the teacher. In other words, teachers with different academic background might be expected to have the same impression when confronted with different children whose voice levels differed in intensity.

The data analysis for the main effect due to treatment showed no difference between levels of intensity for items 4 and 6. However, item 3 (child needs work on reading) presented a different pattern. It was found that there was a significant difference between average intensity and low intensity. The average intensity was rated worse than low intensity by raters. In other words, university students registered different impressions depending upon the vocal intensity (average or low) at which they heard the tape. In reality it might be true that if a teacher were confronted with two children--one with low and the other with average vocal intensity--he or she might form different opinions of their need for additional work on reading. However, there is another explanation for the result--the findings might be due to chance. In other words, there might not be any difference between low level of intensity and average level of intensity with regard to a child's apparent need for additional work on reading. Chance alone might have caused this difference.

Implications

The findings of this investigation lead to the following implications:

1. Academic backgrounds of raters are probably not relevant when it comes to evaluating a child's reading performance relative to variation of the intensity.
2. A child's level of voice intensity does not appear to cause raters to form particular impressions or to inspire particular attitudes towards the child's reading performance.
3. Under circumstances which suggest that a student needs more work on reading, there may well be a difference in the rater's attitude, depending upon whether the child's vocal intensity was average or low.

Recommendations

1. Replication is needed in actual classrooms with students and real teachers.
2. Replication is needed using levels of intensity different from those which were used for this study.
3. Replication is needed in an environment with improved facilities in order to make a videotape of better quality.
4. Replication is needed with different case histories and using different kinds of rating scales.

5. Replication is needed with students who actually have average and low vocal intensities.

6. Because of a general lack of literature regarding this problem, replication of this study is certainly advisable.

APPENDIX A

SAMPLE OF CASE HISTORY

INSTRUCTION

Dear Student:

1. In the following case history you will become familiar with a boy who will be viewed in the videotape in the next step of the experiment. Please read the case history.

CASE HISTORY

This boy was born in Gainesville, Florida. He is an eleven-year-old and, the youngest of three children. He is currently a sixth grader in a middle school. His leisure time activities include baseball, swimming and skateboarding. He has several friends and spends some of his time with them during school break and in his neighborhood. At home he does his chores and prepares his homework for school. He is involved in a city baseball program for three days a week. He has been out of Florida several times. He has seen several states such as Indiana and Ohio, but has not been outside of the United States. He also spends some of his time watching television.

He came from a middle class family, and has two brothers who attend high school His father works for the university, and his mother works as a secretary. Both of them are graduated from high school

The boy spends much of his time in family activities which includes an annual family vacation. Sometimes he interacts well with his brothers but at other times they cannot get along with each other. Sometimes his parents become angry with him for his behavior but this is the exception rather than the rule.

APPENDIX B

SAMPLE OF READING PASSAGE

2. In this step you will view a teacher having a student read a passage from Gates-McKillop Reading Diagnostic Tests. The following passage is identical to what the child is reading on the videotape. Please place an "X" at the point where the child makes error(s) in his reading. Please listen carefully since only one viewing is permitted for research purposes. The tape viewed is exactly the way the child reads, please do not interrupt the viewing process for research purposes.

Passage

After the rat got into his hole,
he began to peek at the dog
This drove the dog nearly mad.
He said. "I like raw meat to eat.
If you do not stop, I will eat you."
Then he left the rat alone.

***

This talk only made the rat smile.
He could not stop smiling.
He stuck out his chin and cried:
"You are as dull as a donkey,
You are as silly as a monkey.
Let me give you a good tip.
You had better find a doctor now, before it is too late.
Maybe he can do something for your head."

***

These remarks made the dog furious. He was so angry he could hardly control himself. He growled in dismay. He gnawed at the ground. Then he barked: "I am the protector of this residence. I am the champion of this estate. I will have no nonsense here. If you value your life and freedom you will depart at once."

***

The rat, a little frightened and very angry, screamed his reply. "What sublime conceit! What magnificent boastfulness! You have neither the courage nor the intelligence to execute your threat. You would perish miserably if your misguided human helpers did not provide you with protection. You think you are a valiant warrior but you are really nothing but a weak slave of humanity."

***

APPENDIX C

QUESTIONNAIRE

Please mark one of the following, your name is not needed.

_____Graduate or posthaocalaureate

_____Undergraduate

Assuming that you are a teacher, please evaluate the child's performance according to given directions.

I appreciate your cooperation
Shahla Alborzi

A. Please read the following statements, and rate the child according to the given criterion. Place a circle on the appropriate number.

1- very poor
2- poor
3- average
4- good
5- very good

1. Child's voice quality

1 2 3 4 5

2. Speed of reading

1 2 3 4 5

3. Overall reading performance

1 2 3 4 5

B. Please respond to the following statements by circling

the number which indicates your choice.

1- strongly disagree
2- disagree
3- not sure
4- agree
5- strongly agree

1. The child needs the school counselor for individual or group conseling.

1 2 3 4 5

2. The child needs a speech pathologist or an audiologist to work with him.

1 2 3 4 5

3. He needs to work more on reading.

1 2 3 4 5

4. He needs to work more on vocabulary.

1 2 3 4 5

5. The boy needs to be referred to a school psychologist for testing.

1 2 3 4 5

6. The child needs to work on his attention span.

1 2 3 4 5

7. The child has problems in managing his own behavior.

1 2 3 4 5

8. His teacher should request a conference with his parents about his behavior.

1 2 3 4 5

9. His teacher should request a conference with his parents to discuss his academic performance.

1 2 3 4 5

10. His parents should work more with him at home.

1 2 3 4 5

11. The boy is progressing normally.

1 2 3 4 5

APPENDIX D

TABLES OF RESULTS

TABLE 6

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 1

Variable	Mean		Standard Deviations
Undergraduate	Average	2.40	0.82
	Low	1.78	0.80
	High	2.37	0.95
Graduate	Average	3.00	0.00
	Low	2.25	1.38
	High	1.75	0.95

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	3.25	1.83	0.17
Group	1	0.32	0.36	0.54
Treatment X Group	2	2.92	1.65	0.20

Item 1. The child needs the school counselor for individual or group counseling.

TABLE 7

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 2

Variable		Mean	Standard Deviations
Undergraduate	Average	2.13	0.91
	Low	1.87	1.35
	High	1.75	0.95
Graduate	Average	2.66	1.15
	Low	1.71	0.46
	High	2.56	1.26

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	4.15	1.97	0.14
Group	1	0.18	0.02	0.89
Treatment X Group	2	2.93	1.40	0.25

Item 2 The child needs a speech pathologist or an audiologist to work with him.

TABLE 8

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 4.

Variable		Mean	Standard Deviations
Undergraduate	Average	2.93	1.09
	Low	2.21	0.69
	High	2.50	1.15
Graduate	Average	2.33	0.57
	Low	3.12	1.35
	High	2.00	0.81

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	1.30	0.88	0.42
Group	1	0.21	0.20	0.65
Treatment X Group	2	5.70	2.62	0.08

Item 4. He needs to work more on vocabulary.

TABLE 9

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 5

Variable	Mean		Standard Deviations
Under-graduate	Average	2.40	0.82
	Low	1.78	0.69
	High	2.12	1.08
Graduate	Average	2.66	0.57
	Low	2.62	1.40
	High	1.75	0.95

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	1.90	0.88	0.42
Group	1	0.21	0.20	0.65
Treatment X Group	2	5.70	2.62	0.08

Item 5. The boy needs to be referred to a school psychologist for testing.

TABLE 10

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 6

Variable		Mean	Standard Deviations
Undergraduate	Average	2.20	0.77
	Low	1.65	0.63
	High	1.87	1.08
Graduate	Average	2.66	0.57
	Low	2.12	1.35
	High	1.50	0.57

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	3.03	1.79	0.17
Group	1	0.54	0.64	0.42
Treatment X Group	2	1.63	0.96	0.38

Item 6 The child needs to work on his attention span

TABLE 11

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 7

Variable	Mean		Standard Deviations
Undergraduate	Average	2.46	0.74
	Low	2.21	0.89
	High	2.00	0.89
Graduate	Average	2.66	0.57
	Low	2.25	1.38
	High	2.25	1.50

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	2.00	1.06	0.35
Group	1	0.20	0.22	0.64
Treatment X Group	2	0.10	0.05	0.94

Item 7. The child has problems in managing his own behavior.

TABLE 12

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 8

Variable	Mean		Standard Deviations
Under-graduate	Average	2.33	0.61
	Low	2.14	0.94
	High	2.12	1.08
Graduate	Average	2.66	0.57
	Low	2.37	1.50
	High	1.75	0.95

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	1.10	0.55	0.57
Group	1	0.06	0.06	0.80
Treatment X Group	2	0.94	0.47	0.62

Item 8. His teacher should request a conference with his parents about his behavior

TABLE 13

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 9

Variable	Mean		Standard Deviations
Undergraduate	Average	2.73	0.88
	Low	2.28	0.72
	High	2.25	0.85
Graduate	Average	2.66	0.57
	Low	2.87	1.45
	High	2.75	1.25

Source	F	Sum of Squares	F	Significance of F
Treatment	2	1.53	0.85	0.43
Group	1	1.82	2.00	0.16
Treatment X Group	2	0.75	0.42	0.66

Item 9. His teacher should request a conference with his parents to discuss his academic performance.

TABLE 14

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 10

Variable	Mean		Standard Deviations	
Undergraduate	Average	3.00	0.84	
	Low	2.42	0.75	
	High	2.68	1.07	
Graduate	Average	3.33	0.57	
	Low	2.87	1.45	
	High	2.25	0.95	
Source	**DF**	**Sum of Squares**	**F**	**Significance of F**
Treatment	2	2.48	1.55	0.22
Group	1	0.82	1.03	0.31
Treatment X Group	2	2.53	1.59	0.21

Item 10. His parents should work more with him at home.

TABLE 15

Mean, Standard Deviations and Analysis of Variance Summary Table for Item 11

Variable	Mean		Standard Deviations
Undergraduate	Average	2.13	0.74
	Low	2.14	0.94
	High	2.68	1.07
Graduate	Average	2.66	0.57
	Low	1.75	0.70
	High	2.00	0.81

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	2.70	1.69	0.19
Group	1	0.76	0.96	0.33
Treatment X Group	2	2.24	1.41	0.25

Item 11. The boy is progressing normally.

TABLE 16

Mean, Standard Deviations and Analysis of Variance Summary Table for Q_1

Variable		Mean	Standard Deviations
Undergraduate	Average	3.46	0.74
	Low	3.78	0.69
	High	3.81	0.83
Graduate	Average	3.00	1.00
	Low	4.12	0.83
	High	3.75	0.95

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	2.76	2.18	0.12
Group membership	1	0.01	0.02	0.89
Treatment X Group Membership	2	1.13	0.89	0.41

Q_1 = Child's voice quality.

TABLE 17

Mean, Standard Deviations and Analysis of Variance Summary Table for Q_2

Variable	Mean		Standard Deviations
Undergraduate	Average	3.73	0.70
	Low	4.07	0.61
	High	3.75	0.68
Graduate	Average	3.66	1.52
	Low	4.25	0.70
	High	3.75	0.50

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	2.01	1.95	0.15
Group	1	0.05	0.10	0.75
Treatment X Group	2	0.12	0.12	0.88

Q_2 = Speed of reading.

TABLE 18

Mean, Standard Deviations and Analysis of Variance Summary Table for Q_3

Variable	Mean		Standard Deviations
Under-graduate	Average	3.93	0.79
	Low	4.21	0.69
	High	4.12	0.71
Graduate	Average	4.33	1.15
	Low	4.37	0.74
	High	4.00	0.81

Source	DF	Sum of Squares	F	Significance of F
Treatment	2	0.60	0.51	0.60
Group	1	0.18	0.32	0.57
Treatment X Group	2	0.39	0.34	0.71

Q_3 = Overall reading performance.

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Shahla Alborzi was born on April 20, 1952, in Abadan, a city in the south of Iran. She graduated from Shiraz University High School in 1970 with a diploma in natural science. Her bachelor's degree was earned in educational psychology from Shiraz University, Iran, in 1975. Continuing at Shiraz University, she pursued a master's degree in educational psychology, meanwhile contributing to the research center of Shiraz University. She also worked as a counselor for undergraduate students at the university for three semesters. For a few months she served as a teacher and then as the principal of the elementary and middle school of Shiraz University. She was awarded the master's degree in educational psychology in 1978. Shiraz University then offered her a scholarship to pursue a Ph.D. program in special education which was subsequently undertaken and completed at the University of Florida. Her area of special interest is mental retardation and she is a member of the Council for Exceptional Children. She is married.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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